"3. That in both sets of cells Nissl's granules, otherwise known as the chromatic granules, are either smaller in size, fewer in number and scattered through the cell body tending to be most numerous round the nucleus, or else they are grouped together in large masses round the nucleus, leaving he periphery of the cell quite clear.

"4. That pericellular lymph spaces may become enlarged, especially in he ganglia cells, and where the enlargement is very marked, the cells become proportionately smaller in size—although an actual atrophy may also occur. In several of my specimens I found large vacuoles—not the vacuoles described by many writers as occurring in the cells of the cord and cerebral cortex, which are probably to some extent artificial—but big vacuoles more resembling distended pericellular lymph spaces. They differ, however, inasmuch as they are surrounded by the remains of cell protoplasm containing chromatic granules.

"5. That in the multipolar cells not merely are there these changes in position and size of nuclei, and arrangements and number of chromatic granules, but there is as a later phenomenon, marked disintegration of cell protoplasm, well seen in some of my specimens. This disintegration has been described by Marinesco as occurring in certain cord lesions in man. It consists of patches—which with toluidin blue and eosin, are whitish in color and surrounded by masses of chromatic granules." PATRICK.

THE ALTERATIONS OF THE NERVE ELEMENTS IN EXPERIMENTAL UREMIC DYSCRASIA.

Drs. Sacerdotti and D. Ottolenghi, of Torino, have made very interesting experiments on the effect of uremic poisoning upon the various nerve systems, and have published their results in the January, 1897, No. of the Rivista di Patologia Nervosa e Mentale.

Their experiments were made on four dogs and three rabbits. In three dogs the kidneys were extirpated at one time; in the fourth 75 days intervened before extirpation. In one rabbit the kidneys were removed, and in the other two the ureters were ligated near their entrance into the bladder. Of the dogs, one lived four days, 2 hours; the second, 5 days, 9 hours; the third, 7 days, 10 hours; the fourth, 4 days, 10 hours. The rabbit whose kidneys were removed lived 50 hours, the others 48 and 56 hours respectively.

The macroscopic examination of the brains of these animals offered nothing of importance. A certain amount of hyperæmia was present in two of the dogs' brains, while in the other two the brains were anæmic. The brain of the dog that lived 7 days showed a slight diffuse opacity of the pia, and a slight amount of softening of the superficial strata of the cortex. The rabbits' brains showed nothing appreciable. The methods employed were those of Golgi and Nissl.

The ganglion cells of the brain cortex, of the hippocampus, cerebellum, and the neuroglia cells showed a degeneration or rather a varicose atrophy of the protoplasmic prolongations in various degrees.

The authors draw the following conclusions from their experiments:—

1. That ligation of the ureters or bilateral nephrectomy provokes in the nerve centres lesions easily demonstrated by Golgi's method. Lesions characterized by a varicose atrophy of the dentrites of the ganglion cells, while the axis cylinder prolongation remains unaltered. Also that, contrary to the teachings of Acquisto and Pusaterie, the neuroglia cells do participate, showing varicose degeneration of the prolongations of the cells.

2. That regarding the distribution of these lesions—

a. The elements having undergone degeneration are most diffuse in the whole cerebral cortex and appertain to the different layers of cells.

b. Less numerous than in the cerebral cortex, but yet abundant are the altered cells in the foot of the hippocampus;

c. In the cerebellum the degenerated cells sare found in the molecular stratum;

d. The neuroglia in the whole region studied is more or less altered.

KRAUSS.

THE NEUROGLIA, NORMAL AND PATHOLOGICAL.

F. W. Enrich has published the results of some careful work with the new Weigert stain for neuroglia (Brit. Med. Jour., Oct. 10th, 1896).

"The results obtained by this new method are somewhat at variance with the views held by Golgi and others. The latter believed that the neuroglia consists of an intricate feltwork of cells and their branches; Weigert is of opinion that in the adult, at least, these fibres or branches become differentiated from the protoplasm of the cell body. The usefulness of a method increases in proportion as it is employed side by side with other methods. Golgi's process has demonstrated the epiblastic origin of neuroglia; the shapes and forms of its primitive elements in the fœtus and their relation to nerve cells, nerve fibres and blood vessels; comparative anatomy has shown the evolution of the neuroglia cell; and Weigert's stain shows the ultimate stage of this neuroglia, and its distribution in the human adult. Not all the neuroglia appears to reach this last stage, in which the fibre has become differentiated from the cell protoplasm; some probably remains in the pure cell condition, but ready to form the ultimate fibre when called upon to do so. Whether these newly-formed fibres which constitute all forms of sclerosis and all cicatricial processes within the central nervous system are formed from cells which have rejuvenesced, as it were, after having in the natural course of their development given off the full-formed fibre, or whether the younger type of neuroglia cell is the parent, cannot as yet be determined. Weigert's view as to the nature of adult neuroglia has been objected to on technical grounds; the neuroglia fibres even in the adult are said by these opponents to be still real cell processes; a study of the processes going on in the cerebral cortex in general paralysis sufficiently refutes this. Of the functions of the neuroglia we know little; probably a more complete study of the dstribution of that tissue will aid us. Possibly its function varies with each step in the development of the nervous system; at first it directs the growth; then it supports fibre and cell; and lastly, it insulates. In addition it probably acts as a fourth coat to the blood vessels, which, in the central nervous system, are notoriously in adventitia. Abnormalities in the formation of the neuroglia may possibly affect detrimentally these functions; but this subject requires a further and vaster amount of study. Neuroglia cells have also been supposed to have a "scavenger" function in some morbid processes, and to be part of a lymph connective system; this theory, however, is very improbable in the face of the development and distribution of the neuroglia elements. Some interest attaches to the relation between syringomyelia and so-called central "gliosis"; Weigert appears to be of opinion that the former cannot result from a softening of the latter. Another interesting feature is the varying direction of fibres in secondary sclerosis. The majority run parallel to the course of the degenerated axis cylinder; but some, for example, in the spinal cord, run at right angles to it, and outwards beyond the area of a nerve degeneration, till they reach the peripheral zone of neuroglia which becomes thickened. This secondary hypertrophy of the subpial layers has perhaps now and again been mistaken for a peripheral degeneration of nerve fibres."

PATRICK (Chicago).

DEGENERATION FOLLOWING LESIONS OF THE OCCIPITAL LOBE.

Shaw (Brit. Med. Jour., Sept. 12th, 1896) reports the results of careful study of the degenerations caused by lesions of the occipital